

REMARKS

This Amendment is submitted in response to the Official Letter dated November 29, 2004, in which the Examiner rejected Claims 6-10 and 22-31. The Specification and Claims 10, 22, and 27 have been amended to more clearly state the present invention and to clarify technical issues that were indicated by the Examiner. No new matter has been added. Applicants request reconsideration of these Claims in light of the amendments and the remarks submitted below. Thus, Claims 6-10 and 22-31 are pending and remain for consideration.

The Examiner rejected Claim 10, 22, 23, 27-29 and 31 under 35 U.S.C. 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter according to the invention. With respect to Claim 10, the Examiner states that it is vague and unclear what is meant by external/internal to the major outer diameter of the armature. The Specification has been amended to describe in greater detail that which is shown in the Figures. In particular, a major diameter of the armature is indicated thereby clarifying what is meant by internal and external to the major diameter. The terms internal, external, and major diameter are terms understood in the art. No new matter has been added.

The Examiner rejected Claims 6-10 and 22-26 under 35 U.S.C. 103(a) as being anticipated by U.S. Patent 5,503,184 to Reinartz et al., (hereinafter Reinartz) in view of U.S. Patent 5,110,087 to Studtmann et al. (hereinafter Studtmann), and U.S. Patent 5,513,673 to Slavin et al. (hereinafter Slavin). Applicants respectfully disagree.

Studtmann only shows one radial shoulder gap (G-G) that results in a radial or lateral magnetic force. The gap F-F is not a lateral gap as is specifically claimed. The gap F-F is between faces of an armature and a pole piece, not between shoulders and is therefore an axial gap. Thus, the magnetic force between them is in an axial direction, not lateral. This is also specifically recited in Studtmann, particularly at Column 11, Lines 14-15, the air gap F-F is defined as "an axial air gap". At Column 11, Lines 24-25, the air gap G-G is defined as "a radial working gap". The first and second lateral flux gaps of the claimed invention are of the shoulder design and are lateral gaps, that is, situated at or on the side. Thus, the axial gap F-F cannot be a lateral gap as is

recited in the Applicants' claims. Similarly, with respect to Claims 30 and 31, the gap R-R is a face to face gap and thus, the same remarks about the gap F-F also apply to the gap R-R. Also, gaps R-R and G-G are not formed in a stepped relation to each other as claimed, shown in the Figures, and described in the Specification, but rather are positioned perpendicularly to each other. Therefore, the addition of the disclosures of Studtmann to those of Reinartz would not disclose the Applicants' invention.

In addition, Studtmann does not disclose the flux ring as it is claimed by the Applicants. The Examiner states that the housing 212 is the same as the flux ring of the Applicants' invention. However, the housing 212 cannot be the same as the Applicants' flux ring. The gap R-R between the housing 212 and the armature 220 is a non-working gap as the reluctance of the gap R-R remains substantially constant throughout the range of motion of the armature 220. Thus, the gap R-R is not a "third working lateral flux gap" as is now claimed. The interpretation presented by the Examiner is, therefore, contrary to the Applicants' invention in that the flux ring is used to define the third flux gap between the step (530) of the armature and the flux ring. The third gap is defined as a lateral gap. In the "triple gap" system that is claimed, the gaps work to increase the overall force that is operating on the valve armature while maintaining a relatively linear force versus displacement operating curve for the control valve system. Studtmann does not show this third lateral gap (as was explained above) and therefore does not utilize, show or suggest the need for a flux ring to define such a gap. Based on the foregoing, Studtmann does not anticipate or make obvious the Applicants' invention as defined by the Applicants' claims.

In addition, the Examiner submits that Slavin discloses multiple stepped lateral flux gaps and that it would have been obvious to one skilled in the art to adapt the disclosure of Reinartz and Studtmann to incorporate the stepped features of Slavin. The Applicants respectfully disagree. First, Slavin is described as being an electronically controlled automatic transmission solenoid valve. The Slavin valve has a dual outer diameter radial gap solenoid plus a single axial magnetic gap to control a spool valve. Being in an automatic transmission sump, the valve works at low pressure (only up to about 6 bar) and has the unavoidable leakage characteristics of a

spool valve. Additionally, the Slavin valve does not require, as a part of its design, to seal against external fluid leakage. With respect to control valves as described and claimed as a part of the Applicants' invention, within a brake system, fluid leakage is preferably minimized since brake systems are typically closed loop systems. Additionally, brake systems typically operate at high pressures, something the Slavin valve is not configured to do. For these reasons, one skilled in the art would not look to Slavin as a valve for use in combination with Reinartz and Studtmann.

Also, nothing in Slavin shows a stepped gap structure to increase the useful output force of the valve. The structure of Slavin indicates that the stepped structure is only used to maximize the attractive area of the pole pieces. Additionally, with respect to Claims 10 and 31, the claimed armature designs have dual radial gaps and triple axial magnetic gaps with the radial gaps being on the inner diameter of the armature rather than the outer diameter surfaces for performance considerations. This feature is patentable over the steps formed on the outer diameter of armatures as shown in the cited references.

Since the working lateral flux gaps claimed by the Applicants are not shown or suggested by any of the references cited by the Examiner, the Applicants request withdrawal of the rejections of Claims 6-10 and 22-26.

The Examiner also rejected Claims 30 and 31 under 35 U.S.C. 103(a) as being obvious over Studtmann in view of Slavin. However, the remarks above also apply to the references the Examiner applies to Claim 30 and 31.

Additionally, with respect to the Examiner's use of Studtmann, Reinartz, and Slavin in combination, the Federal Circuit has consistently said that in order for references to be properly combined they must contain some teaching or suggestion of the proposed combination. In *Panduit v. Dennison Manufacturing Co.*, 1 U.S.P.Q.2d 1593, 1597 (Fed. Cir. 1987), the Federal Circuit reviewed the District Court's finding that a plastic cable tie was obvious based on prior art under 35 U.S.C. 103. The District Court had concluded that Panduit's cable tie was obvious because its components had separately appeared in prior patents. The Federal Circuit noted that the District Court, "improperly treated all cable ties as virtually interchangeable" *Panduit* at 1600. In

reversing the District Court, the Federal Circuit noted that the prior art as a whole must suggest the combination claimed in the application; and "hindsight reconstruction from similar elements in separate prior patents would necessarily destroy virtually all patents and cannot be the law under 35 U.S.C. 103." *Panduit* at 1603, citing, *Akzo N.V. v. International Trade Commission*, 1 U.S.P.Q.2d 1241, 1246 (Fed. Cir. 1986), and *W.L. Gore & Associates, Inc. v. Garlock*, 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983), cert. denied, 469 U.S. 461 (1984).^{1/}

Here, the rejection is treating all references involving magnetic armatures with any form of step as interchangeable and attempting to recreate the Applicants' invention based on "hindsight reconstruction." There is nothing in any of the references that enables the combination of the hydraulic control valve of Reinartz with the armatures, cores and other components of Studtmann and Slavin. With respect to Claim 6, none of the references show or suggest the flux ring of the Applicants' invention. Even if Studtmann shows a flux ring, it is not readily apparent from the references as to how they would operate within such a structure. Additionally, with respect to Claim 6, there is no disclosure or suggestion of how the components of Reinartz and Slavin can be used to cooperate with the pressure boundary and armature to form the lateral flux gaps as shown and described by the Applicants. In fact, such a combination could not be made without a substantial impact on the performance of the mechanisms as disclosed in their respective patents. In particular, by disposing an armature within a pressure boundary created by a sleeve and with a coil disposed outside the sleeve, as is specifically claimed, the movable components of the devices of Reinartz and Slavin would be separated from the coils and there is no showing or suggestion as to how they could operate if such a separation were made. Therefore, the references cannot properly be combined.

Thus, for at least these reasons, the Applicants request withdrawal of the rejections. Since Claims 7-10 and 22-26 depend from Claim 6, those claims should be allowable as well, for at least that reason.

^{1/} See also, *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984); *Carella v. Starlight Archery, Inc.*, 231 U.S.P.Q. 644, 647 (Fed. Cir. 1986); and *Fromson v. Advance Offset Plate, Inc.*, 225 U.S.P.Q. 26, 31 (Fed. Cir. 1985).

In view of the foregoing amendment, remarks and arguments, it is believed that Claims 6-10 and 22-31 are in condition for allowance. Therefore, the Applicants contend that all of the pending claims are patentable over the Examiner's rejections, and request reconsideration and withdrawal of the rejection of the Claims.